INTRODUCTION

In the current standards-driven academic environment, success is most often measured by student achievement on state and national assessments with the end goal of preparing our students to be able to communicate effectively and to be critical thinkers. Technology is not addressed in many state standards (including Pennsylvania’s), but as our society continues to develop and place more emphasis on the uses of technology, schools must learn how to incorporate technology into the classroom.

Hundreds of software applications exist for use in the mathematics classroom. Many of these packages were developed with academic standards in mind, but several other applications exist that are useful in both academic and non-academic settings. Considerable research has been conducted examining not only the effectiveness of technology as an instructional tool but also regarding the various learning styles of our students. I feel that it is imperative for all educators to explore the possibilities presented through the use of technology because, if implemented properly, technology can be a powerful aid in not only meeting academic standards but also in helping to prepare students for the technical climate of the “real world”.

BY THE BOOK: WHAT THE STANDARDS SAY

In the Academic Standards for Mathematics, the Pennsylvania Department of Education (PDE, 2002) states: “Because our capacity to deal with all things mathematical is changing rapidly, students must be able to bring the most modern and effective technology to bear on their learning of mathematical concepts and skills.” Within these standards, however, few provisions are made for the inclusion and use of technology in a mathematics classroom. For example, in Section 2.2, which lists 28 standards regarding computation and estimation for Grades 3, 5, 8, and 11, only one standard is listed that addresses technology. Section 2.2.11.F, a standard for students in Grade 11, states that students should be able to “demonstrate skills for using computer spreadsheets and scientific and graphing calculators” (PDE, 2002). Throughout the Academic Standards for Mathematics, the use of technology is included sparsely as separate standards, but the standards leave room for creative interpretation and implementation by teachers and administrators alike.

The National Council of Teachers of Mathematics (NCTM, 2000) has developed Principles and Standards for School Mathematics, which they feel presents the ideal goals of a mathematics curriculum. They have developed six principles that are intended to be the foundation for school mathematics programs and the basis for which educators make decisions regarding mathematics instruction. NCTM recognizes the importance of technology by listing it as one of the principles, stating: “Technology is essential in teaching and learning mathematics; it influences the mathematics taught and enhances students’ learning.”

Even though educators are not held accountable for being in compliance with the NCTM-developed standards, Principles and Standards for School Mathematics serves as a guidebook for non-traditional teachers who seek a well-rounded curriculum that is in tune with state academic standards as well as the modern social climate. Pennsylvania’s state standards do not include or specify the use of technology as part of the plan for successfully achieving the standards; however, opportunities exist to incorporate technology into the instruction for the other academic standards if educators are properly prepared.
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